

Applicants : Kenneth Schofield, Mark L. Larson and Keith J. Vadas  
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**Remarks:**

The remarks presented herein are believed to be fully responsive to the Office Action dated June 19, 2009 and the Advisory Action dated October 1, 2009, the period for response being extended via the petition and fee for a two month extension of time. Claims 50-52, 56, 58, 62, 67 and 92-109 are pending in the application.

Applicants submit this response with a Request for Continued Examination to remove the finality of the prior rejection. Applicants request reconsideration and withdrawal of the rejection of claims 50-52, 56, 58, 62, 67 and 92-109. If the Examiner still maintains his position on what is allegedly disclosed and rendered obvious by Fukuhara, Secor, Choi, Tuck and/or Kishi, Applicants request an interview with the Examiner to discuss this matter further to expedite prosecution and allowance of the claims and to avoid proceeding with an Appeal of any future rejections.

**CLAIM REJECTIONS**

Claims 50, 52, 56, 58, 62 and 67 were rejected under 35 U.S.C. §103(a) as being unpatentable over Secor, U.S. Patent No. 5,289,321, in view of Fukuhara, U.S. Patent No. 4,653,316, and in further view of Choi, U.S. Patent No. 5,121,200, while claim 51 was rejected under 35 U.S.C. §103(a) as being unpatentable over Secor, in view of Fukuhara and Choi, and in further view of Tuck, U.S. Patent No. 4,772,942. Claims 92-99 were rejected under 35 U.S.C. §103(a) as being unpatentable over Secor, in view of Tuck and in further view of Choi, while claims 100-109 were rejected under 35 U.S.C. §103(a) as being unpatentable over Secor, in view of Tuck and Choi, and in further view of Kishi et al., U.S. Patent No. 5,414,461.

Applicants respectfully traverse the rejections under 35 U.S.C. §103(a) for at least the reasons set forth below. However, and solely to expedite prosecution and allowance of the claims and without acquiescing to the rejections in any way, Applicants have clarified independent

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claims 50 and 105 as set forth above and submit that claims 50-52, 56, 58, 62, 67 and 92-109 are in condition for allowance.

Applicants have clarified independent claim 50 to clarify that the at least two image capture devices capture images external of the vehicle. The synthesized image is displayed as a single image on a single display screen that is viewable by a driver of the vehicle when the driver is normally operating the vehicle. The displayed image displayed on the single display screen includes an image portion from each of the at least two image capture devices. The image processor processes the outputs by at least one technique chosen from luminant blending, chrominant blending, dynamic range extending, pixel group compensation, anti-blooming, multiple exposure, image morphing compensation and image warping compensation. Independent claim 105 has been clarified to clarify that the displayed composite image displayed on the single display screen includes an image portion from each of the at least two image capture devices.

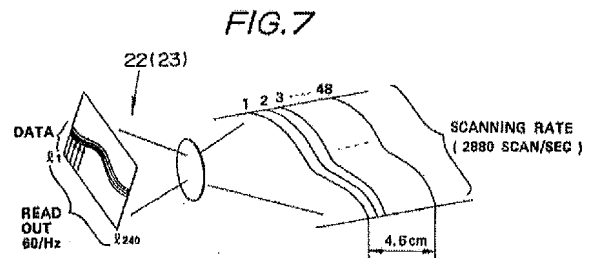
#### Rejection of Independent Claim 50

With respect to the rejection of independent claim 50, Applicants again submit that the combination of Secor and Fukuhara and Choi does not disclose or suggest or render obvious the claimed vision system for at least the reasons set forth below and in the previous responses dated October 15, 2008 and April 3, 2009. Applicants submit that (a) Neither Secor nor Choi nor Fukuhara discloses or suggests displaying a synthesized image from two or more cameras on a single display screen; (b) Secor discloses a display screen that is switched between a side-rear view camera 22 and a side-looking camera 34; (c) Fukuhara does not disclose or suggest a vision system, (d) Fukuhara does not disclose or suggest an image processor that produces a synthesized image, (e) Fukuhara does not disclose cameras with overlapping fields of view, and (f) Neither Secor nor Fukuhara nor Choi discloses or suggests an image processor that produces a synthesized image from outputs of at least two image capture devices, with the synthesized image displayed on a single display screen that is viewable by a driver of the vehicle when the driver is normally

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operating the vehicle, and with the displayed synthesized image including an image portion from each of at least two image capture devices.

The Office Action again relies on the road surface condition measurement and analysis system of Fukuhara in combination with the single display system of Choi and the multi-camera system of Secor, and simply states that it would have been obvious to combine the teachings of these references to arrive at the claimed invention. Applicants again respectfully traverse for at least all of the reasons previously stated in prior responses. Fukuhara does not disclose a display that displays any images captured by the cameras. The cameras 22, 23 of Fukuhara capture the scanning locus of the laser beam for producing a transverse profile data of the road surface. This is shown in Figure 7 of Fukuhara (reproduced to the right), where the camera 22(23) captures multiple transverse road profiles as the laser is scanned across the road surface in front of the camera (column 3, line 61 to column 4, line 7 of Fukuhara).



The road profile data of the respective cameras are synthesized into a picture image representing the cross-sectional profile of the road (column 4, lines 22-24 of Fukuhara). The data regarding the transverse profile, cracks and the longitudinal profile are recorded on the VTR (column 6, lines 3-5 of Fukuhara), and "the data stored in the memory devices is converted into binary values in the processor 40 in accordance with a threshold value  $L_s$  shown in FIG. 13 so that the position of the crack is judged in accordance with data less than the threshold value  $L_c$ ." (column 6, lines 16-20 of Fukuhara). "The result of judgment is displayed on display means, not shown such as a cathode ray tube." (column 6, lines 20-22 of Fukuhara). There is no disclosure in Fukuhara as to where this display means is located (it may be remote from the vehicle for later analysis of the processed data), and clearly there is no disclosure in Fukuhara that the display means displays images, since the display means is clearly for displaying the result of the judgment of the position of the crack.

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Thus, Fukuhara displays a result of judgment of the position of the crack based on processing of binary values of the data stored in the memory devices. There is absolutely no disclosure or suggestion in Fukuhara of displaying any images on a video display screen, and particularly there clearly is no disclosure or suggestion in Fukuhara of a synthesized image displayed as a single image on a single display screen that is viewable by a driver of the vehicle when the driver is normally operating the vehicle. To the contrary, Fukuhara discloses an apparatus for detecting and analyzing cracks in a road surface.

The Office Action combines the non-displaying apparatus of Fukuhara with the multiple camera system of Secor and the single display system of Choi and asserts that it would have been obvious to combine these teachings and that such a combination meets every limitation of the claimed invention. Applicants again traverse this combination.

The Office Action, at page 2, asserts that Secor allegedly discloses a first camera 22 with an overlapping field of view with a camera 34, and that Fukuhara allegedly discloses a synthesizing circuit that produces a synthesized output from the images received from the cameras 22 and 23, and that Choi allegedly discloses a single display screen viewable by a driver, and thus, the combination of Secor, Fukuhara and Choi disclose the limitations as claimed. Applicants respectfully traverse.

The Office Action merely points to Figures 2 and 4 of Secor (reproduced to the right), and asserts that the cameras have overlapping fields of view, and that it would be obvious to combine the teachings of Secor, Fukuhara and Choi to arrive at the presently claimed invention. Applicants respectfully traverse.

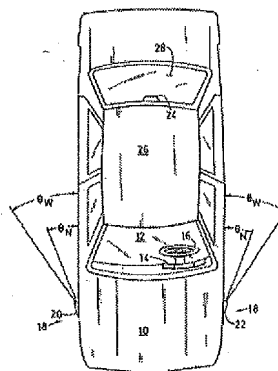


FIG. 2

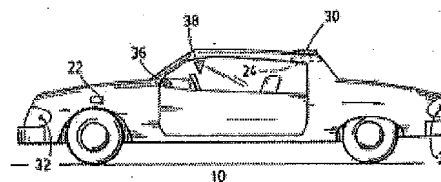


FIG. 4

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Secor discloses multiple cameras and multiple display screens, with each of the display screens displaying images from a respective camera. Clearly and unequivocally, Secor distinguishes side-rear view camera 22 from side-looking camera 34. This is plain from simply looking at the Figures of Secor (such as Figure 3, reproduced to the right), and it is also plain and unequivocal from the description of Secor and how Secor describes and distinguishes the function of camera 22 from the function of camera 34. Secor also discloses that the display screens 42 can be *switched between* the side-rear view camera assembly 22 and the side-looking camera assembly 34 (see column 5, lines 34-41 of Secor). For example, and as clearly disclosed in Secor, the "switching of the screens back from the camera assemblies 34 to the side camera assemblies 20 and 22 occurs automatically, for example, if the vehicle is shifted out of reverse into a forward speed" (see column 5, lines 37-41 of Secor). Thus, clearly, the display screen 42 only discloses images from *one* of the cameras at any given time, and the images captured from *either* the side-rear view camera (22) *or* the side-looking camera (34) are shown on the display screen (42), but the system of Secor *never* shows images from *both* cameras *at the same time on the same screen*, and thus whether or not there is overlap in the fields of view between camera 22 and camera 34 is moot with regards to what Secor teaches, discloses or suggests.

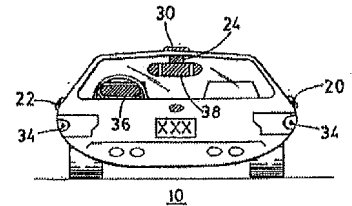


FIG. 3

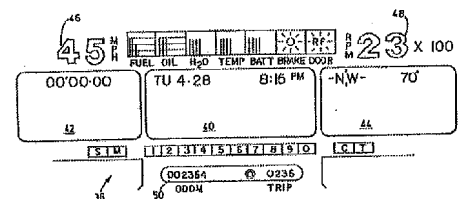


FIG. 5

Secor clearly teaches towards use of a display screen to display images from only a single camera at a time, and thus teaches away from displaying a synthesized image displayed on a single display screen that is viewable by a driver of said vehicle when the driver is normally operating said vehicle, with the synthesized image being produced by an image processor from outputs of at least two image capture devices, and with the displayed image displayed on the single display screen including an image portion from each of the at least two image capture devices, such as is clearly set forth in independent claim 50. Moreover, an artisan armed with Secor would not experience or see the problem seen and solved by Schofield et al., and thus such an artisan would have no motivation to combine Secor with, for example, Choi and/or Fukuhara,

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to attempt to arrive at the presently claimed invention, given that Secor teaches away from the problem seen and solved by Schofield et al.

The Office Action, at pages 2-3, states that "since all of the references are within the same field of endeavor (vehicle camera processing systems), and proper motivation has been stated, the combination is deemed proper." Applicants respectfully traverse. Merely being within the same field of endeavor does not, without more, result in a proper combination, and clearly, any such combination must show all of the limitations of the rejected claims. As discussed herein, none of the applied references discloses or suggests an image processor that produces a synthesized image from outputs of at least two image capture devices, and none of the applied references discloses or suggests a display screen for displaying such a synthesized image on a single display screen that is viewable by a driver of the vehicle when the driver is normally operating the vehicle, and with the displayed image displayed on the single display screen including an image portion from each of the at least two image capture devices.

Thus, one of ordinary skill in the art, armed with the teachings of Secor, would not look to the single display screen of Choi to alter its display features (since Choi also merely discloses display of captured images from a single camera onto a single display screen and thus is wholly irrelevant to the patentability of the claimed invention), and even if such a combination of teachings were made, the skilled artisan would be led towards use of a single display screen (such as of the type disclosed in Choi) that *switches between* a side-rear view camera and a side-looking camera such that, at any given time, the single display would only display captured images from a single camera (such as, for example, either a side-rear view camera or a side-looking camera).

This is in stark contrast to, and teaches away from, the presently claimed invention, which has an image processor that produces a synthesized image from outputs of at least two image capture devices, and a display screen for displaying the synthesized image on a

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single display screen that is viewable by a driver of the vehicle when the driver is normally operating the vehicle.

The Office Action, at page 3, states:

Furthermore, under KSR, all the elements are known, could have been combined without any change of function, and would give predictable results. Thus, this is simply a modification of equivalent parts, not a teaching away. Therefore the rejection has been maintained.

Applicants respectfully traverse. Clearly, if the functions of the Secor and Choi and Fukuhara systems are not changed, one of ordinary skill in the art would have been led towards use of a display screen to display images from a single respective camera. There is absolutely no disclosure or suggestion in any of the applied references of producing a synthesized image from outputs of at least two image capture devices and *displaying* the synthesized image on a single display screen that is viewable by a driver of the vehicle when the driver is normally operating the vehicle, with the displayed image displayed on the single display screen including an image portion from each of the at least two image capture devices. The results that would have been expected from the combination asserted by the Examiner would be to have a display means that displays judgment or analysis information (not video images), such as taught by Fukuhara, or to have a separate display for each respective camera or a display that switches between cameras so that images from only one camera are displayed on the display at any given time (such as taught by Secor). It would clearly have been unexpected to one of ordinary skill in the art, armed with the proposed combination of applied references, to provide a single display screen for displaying an image synthesized from the outputs of two or more cameras, with the displayed image displayed on the single display screen including an image portion from each of at least two image capture devices. Plainly, since an artisan armed with Secor would be switching the display between the cameras, there would not have been any motivation to combine the teachings of Secor with those of Choi (single camera and display) or Fukuhara (laser beam scanning apparatus for detecting road surface conditions, with no display of captured video images).

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As discussed in the previous responses, Secor merely discloses a display screen that displays images captured by a respective camera and does **not** disclose or suggest a display screen for displaying an image synthesized from outputs of at least two image capture devices, with the display screen displaying the synthesized image on a single display screen that is viewable by a driver of the vehicle when the driver is normally operating the vehicle, and with the displayed image displayed on the single display screen including an image portion from each of the at least two image capture devices. Moreover, Fukuhara does not disclose or suggest any video display screen, particularly a video display screen for displaying such a synthesized image. Further, Choi plainly fails to remediate or fill in what is missing from Fukuhara and Secor, and merely discloses a display screen that displays an image captured by a single camera that is movable and rotatable.

In stark contrast to the systems of Fukuhara, Secor and Choi, the presently claimed invention of independent claim 50 includes an image processor that produces a synthesized image from the outputs of at least two image capture devices, and displays the synthesized image on a single display screen that is viewable by a driver of the vehicle when the driver is normally operating the vehicle, with the displayed image displayed on the single display screen including an image portion from each of at least two image capture devices. Clearly, the intent of the present invention is to display a single image that is representative of the combined fields of view of the two or more image capture devices and that is viewable by a driver of the vehicle when the driver is normally operating the vehicle. Such a system is not disclosed or suggested in or rendered obvious by the disclosures of Fukuhara, Secor and/or Choi, either alone or in combination with one another or with any other prior art of record.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference or references when combined must teach or suggest all the claimed



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limitations. "Obviousness requires a suggestion of all the elements in a claim (*CFMT, Inc. v. Yieldup Int'l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003)) and 'a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.' *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007). Here, we find that the Examiner has not identified all the elements of claim 1, nor provided a reason that would have prompted the skilled worker to have arranged them in the manner necessary to reach the claimed invention." *Ex Parte Alexander*, 86 USPQ2d at 1122 (BPAI 2007).

In the present case, the Office Action cites the teachings of Fukuhara, Secor and Choi to allegedly arrive at the claimed invention. However, such a combination falls well short of disclosing all of the limitations of claim 50, and clearly such a combination and the Office Action fall well short of providing a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. The Office Action (at page 5), in citing to Choi, merely states:

figures 4 and 8; column 4, lines 13-26). Choi teaches that there is a need in prior art vehicle camera systems to better help protect the camera system (Choi: column 1, lines 52-55). To help alleviate this problem, Choi discloses "an image displayed on a single display screen viewable by a driver" (Choi: figure 4). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to take the apparatus disclosed by Secor and add the processing taught by Fukuhara and Choi in order to obtain an apparatus that provides data more readily.

However, Applicants submit that Choi's teaching that there is "a need to protect the camera system" is wholly irrelevant to the image processing and display of the system of the presently claimed invention. Such a need would not have led one of ordinary skill in the art to combine the apparatus of Secor with the processing of Fukuhara and Choi to, as asserted above by the Examiner, "obtain an apparatus that provides data more readily". This is at least because the presently claimed subject matter has little or nothing to do with protecting a camera system and has all to do with merging multiple captured images into a synthesized image and displaying the synthesized image on a single display screen that is useful and usable to the driver when normally operating the vehicle.

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Moreover, even if the combination of the applied art were made, it would fall well short of disclosing all of the limitations of independent claim 50, and the Office Action and combined references fall well short of providing a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed invention does.

Further, and as discussed above and in the previous Responses, the Office Action states that Fukuhara discloses an image processor producing a synthesized image. However, Applicants again submit that the interpretation of Fukuhara set forth in the Office Action is fundamentally flawed. On page 5 of the Office Action, the Examiner states:

and readily (Fukuhara: column 1, lines 15-21). To help alleviate this problem, Fukuhara discloses "an image processor producing a synthesized image from the outputs of the image capture devices by at least one of: luminant blending, chrominant blending, dynamic range extending, pixel group compensation, anti-blooming, multiple exposure, image morphing compensation, or image warping compensation" (Fukuhara: figures 4 and 8; column 4, lines 13-26). Choi teaches that there is a need in prior art

To the contrary, neither Figures 4 and 8 nor column 4, lines 13-26, of Fukuhara disclose or suggest this. Column 4, lines 13-26 of Fukuhara merely states that "the data read out from respective television cameras are applied to the synthesizing circuit 33, where the data are synthesized in a manner to be described later and then recorded on a VTR 35." Contrary to the assertions in the Office Action, Fukuhara is wholly silent as to any disclosure or suggestion of an image processor that processes outputs of the image capture devices by at least one technique chosen from luminant blending, chrominant blending, dynamic range extending, pixel group compensation, anti-blooming, multiple exposure, image morphing compensation or image warping compensation. Such processing clearly is not described at column 4, lines 13-26 or Figures 4 or 8 of Fukuhara, or for that matter, any where else in Fukuhara.

In stark contrast to the apparatus of Fukuhara, the presently claimed invention of independent claim 50 includes an image processor that produces a synthesized image from the outputs of at least two image capture devices. The image processor processes the outputs by at

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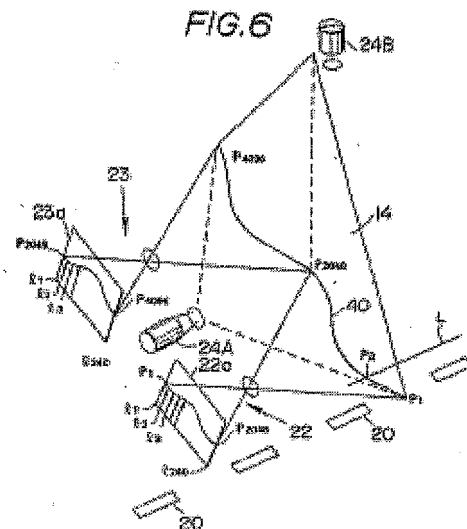
least one technique chosen from luminant blending, chrominant blending, dynamic range extending, pixel group compensation, anti-blooming, multiple exposure, image morphing compensation or image warping compensation.

Applicants submit that Fukuhara does not disclose or suggest such a vision system, but rather discloses a laser beam scanning apparatus for detecting road surface conditions. Fukuhara does not display any images on a display screen that is viewable by a driver of the vehicle when the driver is normally operating the vehicle. To the contrary, the television cameras of Fukuhara catch the locus of a laser beam on the road surface to determine the cross-sectional profile of the road surface. The data regarding the transverse profile are recorded on a VTR and the stored data is converted into binary values in the processor in accordance with a threshold value so that the position of a crack is judged in accordance with data that is less than a threshold value. Fukuhara discloses that the *result of the judgment* (of the position of the crack) is displayed on display means (see column 6, lines 3-23 of Fukuhara). Thus, Applicants submit that nowhere in Fukuhara is there any disclosure or suggestion in Fukuhara that images are captured and displayed to the driver of vehicle, and clearly there is no disclosure or suggestion in Fukuhara that a synthesized *image* is displayed on a single display screen that is viewable by a driver of the vehicle when the driver is normally operating the vehicle, with the displayed image displayed on a single display screen and including an image portion from each of at least two image capture devices.

Secor discloses a vehicle having multiple cameras. Also, as discussed above, Secor teaches that the display may switch between the side-rear view camera 22 and the side-looking camera 34 to provide an image from one of the cameras for viewing by the driver of the vehicle. Thus, Applicants submit that Secor teaches that the camera 34 is directed sideways and its images may be displayed during backing maneuvers, and thus teaches away from a vision system having at least two image capture devices with overlapping fields of view and with a synthesized image of the two image capture devices being displayed on a single display screen for viewing by the driver of the vehicle, and with the displayed image displayed on the single display screen including an image portion from each of at least two image capture devices.

As stated in previous Responses, Applicants submit that Fukuhara does not disclose or suggest cameras with overlapping fields of view and an image processor that synthesizes an image from outputs of the two or more cameras. To the contrary, Fukuhara clearly discloses that each camera has a field of view that encompasses the scanning loci of the laser beam in the range of specific respective positions for each camera. Thus, Applicants submit that Fukuhara teaches away from a vision system having at least two image capture devices with overlapping fields of view.

As disclosed in Fukuhara, the laser beam scanning apparatus includes two television cameras that are directed at a 60 degree downward angle for catching the locus of the laser beam on the road surface and reflected light. The cameras have non-overlapping fields of view such that the cameras 22, 23 pick up the scanning loci 40 of the laser beam respectively in the range of positions P<sub>1</sub> - P<sub>2048</sub> and P<sub>2049</sub> - P<sub>4096</sub> (see column 3, lines 56-60 and Figure 6 of Fukuhara, reproduced to the right).



Likewise, Choi does not disclose or suggest cameras with overlapping fields of view. To the contrary, Choi clearly discloses that its system includes a camera (8) that is movable upward and downward and is rotatable, and with the monitor displaying images captured by the camera. There is no disclosure or suggestion in Choi of multiple cameras having overlapping fields of view, nor is there any disclosure or suggestion in Choi of displaying on a single display screen a synthesized image produced from images of two or more cameras.

Thus, there is absolutely no disclosure or suggestion in Choi of displaying images captured by two cameras with overlapping fields of view on a single display screen. Nor is there any disclosure or suggestion in Choi of producing a synthesized image from outputs of at least two cameras, and displaying such a synthesized image on a single display screen that is viewable by a driver of the vehicle when the driver is normally operating the vehicle, with the displayed

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image displayed on the single display screen including an image portion from each of at least two image capture devices.

To the contrary, Choi merely discloses monitoring means for monitoring the front, rear, and right and left sides of a vehicle by a camera that is movable and rotatable, and a display means for displaying information according to the camera on a monitor. There is no disclosure or suggestion in Choi of displaying any other images on the display screen other than those captured by the single movable and rotatable camera. Plainly, the very selection of Choi in the combination made relies on impermissible hindsight. Unless armed with the disclosure of the present application, one of ordinary skill in the art would lack motivation or guidance to even make such a combination to begin with. And even if such a combination is made, it does not disclose or suggest or render obvious the presently claimed invention, and clearly falls well short of establishing a *prima facie* case of obviousness of the presently claimed invention.

In stark contrast to the systems of Secor and Fukuhara and Choi, the presently claimed invention of independent claim 50 provides a vision system having at least two image capture devices with overlapping fields of view, an image processor that produces a synthesized image from the outputs of the at least two image capture devices, and a display screen that displays the synthesized image, with the synthesized image being displayed on a single display screen that is viewable by a driver of the vehicle when the driver is normally operating the vehicle, with the displayed image displayed on the single display screen including an image portion from each of at least two image capture devices, and wherein the image processor processes the outputs by at least one technique chosen from luminant blending, chrominant blending, dynamic range extending, pixel group compensation, anti-blooming, multiple exposure, image morphing compensation or image warping compensation. Neither Secor nor Fukuhara nor Choi discloses or suggests such a system. For example, neither Secor nor Fukuhara nor Choi discloses a vehicle having at least two image capture devices with overlapping fields of view, with an image processor that produces a synthesized image from the outputs of the at least two image capture devices. Nor is there any disclosure or suggestion in

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Secor or Fukuhara or Choi of, for example, displaying such a synthesized image on a single display screen that is viewable by a driver of the vehicle when the driver is normally operating the vehicle, with the displayed image displayed on the single display screen including an image portion from each of at least two image capture devices. Moreover, Applicants submit that Secor and Fukuhara and Choi teach away from such a vision system.

Therefore, Applicants respectfully submit that the combination of Secor and Fukuhara and Choi does not disclose or suggest or render obvious the vision system of the presently claimed invention, particularly as set forth in independent claim 50 and the claims depending therefrom. Reconsideration and withdrawal of the rejection of claims 50-52, 56, 58, 61 and 67 is respectfully requested.

Rejection of Independent Claim 92

With respect to the rejection of independent claim 92, Applicants submit that the combination of Secor, Tuck and Choi does not disclose or suggest or render obvious the claimed vision system. Again, Applicants submit that Choi does not remediate or fill in what is missing from Secor and Tuck. As discussed above, the mere fact that Choi discloses a display screen does not, either alone or in combination with Secor and/or Tuck, render obvious the presently claimed invention. There is no disclosure or suggestion in Choi of a display system which displays a composite image synthesized from outputs of two or more image capture devices, with the display system displaying such a composite image on a single display screen of the vehicle that is viewable by a driver of the vehicle when the driver is normally operating the vehicle, and with the displayed image including an image portion from each of the two or more image capture devices.

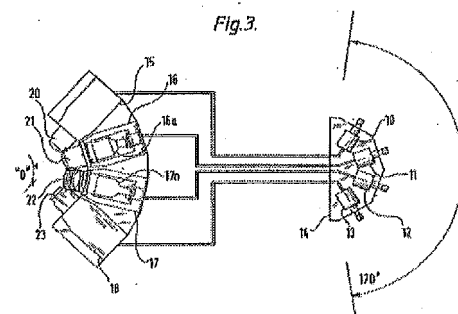
Also, and as discussed in the previous Responses, Secor does not disclose or suggest, for example, a vision system with a display system displaying a composite image (synthesized from outputs of at least two image capture devices) on a single display screen of the

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vehicle that is viewable by the driver of the vehicle. To the contrary, Secor discloses a plurality of LCD screens (40, 42, 44), with each screen displaying a view from the respective camera (and optionally switching between a side-rear view camera and a side-looking camera). Thus, Secor teaches away from presently claimed invention of independent claim 92. Further, the Office Action acknowledges that Secor does not disclose a synthesized image and non-parallel axes as claimed, and cites to Tuck for support of the rejection.

As also discussed in the previous response, Tuck discloses a display system for a tank that includes individual display units mounted side-by-side, each having a respective television camera associated therewith so that a substantially continuous picture of at least part of the surrounding panorama can be reconstructed and viewed by an observer. See, for example, the Abstract and Figure 3 of Tuck, reproduced to the right.

As can be seen in Figure 3 of Tuck, each camera 10, 11, 12, 13 is associated with a respective display generator 15, 16, 17, 18, which display the respective images to the observer "O" through respective magnifying lenses 20, 21, 22, 23. There is no disclosure or suggestion in Tuck of a display system that displays a composite image synthesized from outputs of the image capture devices, with the display system displaying the composite image on a *single* display screen of the vehicle. Nor is there any disclosure or suggestion in Tuck of the display system displaying a displayed image on a single display screen that includes an image portion from each of the image capture devices or cameras. Moreover, Applicants submit that Tuck teaches away from such a vision system by teaching that each of the individual display units has a respective television camera associated therewith, such that images captured by each television camera are displayed on their associated display unit such that the displayed image on one of the individual display units cannot have an image portion from each of the image capture devices.



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The Office Action, at page 3, asserts that:

On page 10, applicant argues that Tuck teaches away from the present invention. While the applicant's points are understood, the examiner respectfully disagrees. While Tuck illustrates multiple displays in figure 4, Tuck discloses in column 4, lines 55-67, that the operator will view the scene as being from a single wide angle view. Hence, the multiple displays function as a single display unit. Furthermore, under KSR, all the elements are known, could have been combined without any change of function, and would give predictable results. Thus, this is simply a modification of equivalent parts, not a teaching away. Therefore the rejection has been maintained.

Applicants respectfully traverse. The disclosure cited in Tuck falls well short of disclosing or suggesting or rendering obvious the presently claimed invention, which includes the following limitations:

a display system which displays a composite image synthesized from outputs of said image capture devices, said display system displaying said composite image on a single display screen of the vehicle that is viewable by a driver of the vehicle when the driver is normally operating the vehicle, the displayed image including an image portion from each of said image capture devices (see claim 92).

Nowhere in any of the applied references is there a disclosure or suggestion of a display system that displays a composite image synthesized from outputs of at least two image capture devices, with the display system displaying the composite image on a single display screen of the vehicle that is viewable by a driver of the vehicle when the driver is normally operating the vehicle, and with the displayed image including an image portion from each of the image capture devices.

Clearly, if the functions of the Secor and Tuck and Choi systems are not changed, one of ordinary skill in the art would have been led towards use of a display screen or screens to display images from a single respective camera. There is absolutely no disclosure or suggestion in any of the applied references of displaying a composite image synthesized from outputs of at least two image capture devices and displaying the composite image on a single display screen that is viewable by a driver of the vehicle when the driver is normally operating the vehicle, with the displayed image including an image portion from each of the image capture devices. The results that would be expected from the combination asserted by the Examiner would be to have a separate display for each respective camera or a display. It would clearly have been unexpected



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to one of ordinary skill in the art, armed with the proposed combination of applied references, to provide a single display screen for displaying a composite image synthesized from the outputs of two or more cameras, with the displayed image including an image portion from each of the image capture devices. Plainly, since an artisan armed with Secor would either be displaying a camera image on a respective screen or switching the display between the cameras, there would not have been any motivation to combine the teachings of Secor with those of Tuck (multiple cameras with multiple respective displays) or Choi (single camera and display).

Therefore, Applicants respectfully submit that the combination of Secor, Tuck and Choi does not disclose or suggest or render obvious the vision system of the presently claimed invention, particularly as set forth in independent claim 92 and the claims depending therefrom. Reconsideration and withdrawal of the rejection of claims 92-98 is respectfully requested.

Rejection of Independent Claim 99

With respect to the rejection of independent claim 99, Applicants submit that the combination of Secor and Tuck and Choi does not disclose or suggest or render obvious the claimed vision system for at least the reasons set forth above with respect to the rejection of independent claim 92. Reconsideration and withdrawal of the rejection of independent claim 99 and claims 100 and 101 depending therefrom is respectfully requested.

Rejection of Independent Claim 102

With respect to the rejection of independent claim 102, Applicants submit that the combination of Secor and Tuck and Choi and Kishi et al. does not disclose or suggest or render obvious the claimed vision system for at least the reasons set forth above with respect to the rejection of independent claim 92. Reconsideration and withdrawal of the rejection of independent claim 102 and claims 103 and 104 depending therefrom is respectfully requested.

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Rejection of Independent Claim 105

With respect to the rejection of independent claim 105, Applicants submit that the combination of Secor and Tuck and Choi and Kishi et al. does not disclose or suggest or render obvious the claimed vision system. As discussed above, neither Secor nor Tuck nor Choi disclose or suggest, for example, a vision system for a vehicle having a gear actuator and comprising at least two image capture devices positioned on the vehicle and directed rearwardly with respect to the direction of travel of the vehicle, with a display system that displays a composite image synthesized from outputs of the image capture devices, and with the display system displaying the composite image on a single display screen of the vehicle that is viewable by a driver of the vehicle when the driver is normally operating the vehicle, and with the displayed composite image displayed on the single display screen including an image portion from each of the at least two image capture devices. Likewise, Kishi et al. does not disclose or suggest such a vision system. Further, Applicants submit that the combination of Secor and Tuck and Choi and Kishi et al. does not disclose or suggest or render obvious such a vision system having, for example, an electronically generated graphic overlay that enhances the driver's understanding of what is in the area adjacent the vehicle, and that is seen superimposed on the displayed composite image, and with the graphic overlay enabled when the vehicle's gear actuator is selected to be in reverse gear. Reconsideration and withdrawal of the rejection of independent claim 105 and claims 106-109 depending therefrom is respectfully requested.

Accordingly, Applicants respectfully submit that Secor and/or Fukuhara and/or Choi and/or Tuck and/or Kishi et al., either alone or in combination with one another or with any other prior art of record, do not disclose, teach, suggest or render obvious the vision system of the present invention, particularly as set forth in independent claims 50, 92, 99, 102 and 105 and in the claims depending therefrom.

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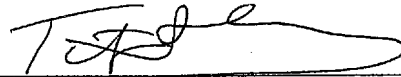
Applicants respectfully submit that claims 50-52, 56, 58, 62, 67 and 92-109 are in condition for allowance and a notice to that effect is earnestly and respectfully requested.

Respectfully submitted,

KENNETH SCHOFIELD ET AL.

By: Van Dyke, Gardner, Linn & Burkhardt, LLP

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